Research on Hospital Medical Crisis Management Based on 4R Theory: A Case Study of the Crisis Event in the Second Affiliated Hospital of Harbin Medical University

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Abstract
The hospital medical crisis management is the strategy adopted by hospitals for medical crisis. It aims to minimize the loss brought about by medical crisis to the hospital through management. By using 4R theory of crisis management and taking the incident of "sky-high medical expenses" happened in Second Affiliated Hospital of Harbin Medical University as an example, we study how to improve and perfect the medical crisis management strategy of hospitals in our country. As a result, we think hospitals can improve the crisis management strategy from four aspects of curtailment, preparation, reaction and resilience, so as to solve this issue appropriately, protect the legitimate rights and interests of patients to the greatest extent and promote the sustainable development of the hospital.

Keywords: Medical crisis, Incident of "sky-high medical expenses", 4R theory, Management

Case Analysis

Introduction
Mr. Wu, a patient with malignant lymphoma, was admitted to the Second Hospital of Harbin Medical University for 82 days with a total cost of 5.5 million yuan. Because the family members of the patients had many doubts about the process of diagnosis, treatment and fees, they sought help from the media [3]. Next, reports of "sky-high medical expenses" were overwhelming. The incident attracted the attention of the Ministry of Health and finally the Second Hospital of Harbin Medical University was dealt with sternly.

Analysis
Some measures taken by the Second Hospital of Harbin Medical University in dealing with the medical crisis were considered inappropriate for this issue. Finally, this hospital failed to solve the crisis, which has had a fatal impact on the survival and development of the hospital in the future. Based on the 4R crisis management theory, the ability of this medical crisis was evaluated and analyzed. It was found that the hospital was weak in crisis management, which mainly contains crisis curtailment, preparation, reaction and resilience [4].
**Suggestions on Hospital Medical Crisis Management**

**Curtailment**
Crisis reduction management is the core content of crisis management, which contains risk assessment, risk management and hospital quality.

**Risk Assessment**
When a sudden medical crisis occurs, the hospital should identify the source of the crisis as soon as possible and make a systematic and comprehensive assessment of the risks that the crisis may bring and make reasonable decisions quickly according to the assessment, so as to minimize the damage to the hospital [5]. Only when the root causes of the crisis are eliminated or potential risks are reduced, can the response under crisis management be the most effective. Therefore, hospitals need to improve the crisis awareness of hospital crisis managers and enhance their ability to deal with crises, which is the key for crisis management.

**Risk Management**
Hospital risk management can be understood as the process of identifying, analyzing and evaluating various risk factors which hospital managers may encounter in the course of hospital operation, in order to realize the maximum security of hospital with the minimum loss [6].

On the surface, hospital risk management is to manage the risks in medical activities or behaviors. For deep study, risk management means that the risks are planned, controlled and supervised by hospitals through risk identification, risk quantification, risk evaluation and other risk analysis activities, so as to reduce the risk of crisis and ensure the normal operation and development of hospitals. The subject of hospital risk management is hospital managers, and the object is the risk or uncertainty in medical activities. The hospital should set up risk management departments and corresponding risk managers.

Risk management is a process, which consists of risk identification, quantification, evaluation, control and supervision [7]. Through planning, organization, command and control, various scientific management methods are used comprehensively to ensure that hospital activities passed off without any major incident. Risk management has a life cycle, and risk management should be carried out in the whole process of hospital medical activities. The risk management strategies should be adapted to change, so as to realize dynamic risk management throughout the life cycle.

**Hospital Quality**
Hospital quality mainly consists of hospital medical technology, hospital service attitude, medical staff quality, hospital medical equipment and infrastructure. Hospital medical technology is the core of medical quality. The duty of hospital is to treat patients, and the most important part is the level of medical treatment and diagnosis. Medical technology plays a decisive role in hospital quality and is the internal core of hospital quality.

The level of hospital service is one of the important symbols of hospital image. With the development of society, the medical model is also changing. Not only high-level material services are important, but also spiritual services are essential [8]. Therefore, whether from the view of realistic competitive environment or medical needs of medical customers, hospitals must improve the level of service in order to avoid medical crisis caused by service attitude.

Many medical disputes are caused by the low level of medical staff's diagnosis and care, resulting in the occurrence of undesirable damage consequences [9]. Therefore, the most basic quality of medical staff is excellent understand and application of medical technology. The basic symbols of technical excellence can be roughly summarized in several aspects. First of all, is obtaining basic operational skills. Secondly, mastery of general medical knowledge is also very important. Thirdly, medical staff should be proficient at medical specialty technology [10]. Fourthly, medical rapid response ability and emergency response ability is essential. Last but not least, hospital managers should promote medical technology innovation vigorously. Apart from excellent technology, medical ethics is the basic professional quality of medical staff because they are related to the life and health of patients. As a medical staff, we should not only strive to master exquisite medical technology, but also have noble medical ethics and excellent medical skill, and be extremely enthusiastic and highly responsive to patients. Of course, health and physical fitness are also essential basic qualities for medical staff.

Medical equipment plays an important role in the economic, social and comprehensive benefits of hospitals. Hospitals should strengthen infrastructure construction, strive to improve the hospital service environment, and create better conditions for patients.

**Preparation**
Early warning and surveillance system is a whole in crisis management. They monitor a particular environment so that they respond to adverse changes in every detail and send signals to other systems or people in charge [11].

Early warning system can respond more quickly when the crisis starts, make adverse changes noticed and transmitted. It can protect people and property from harm by issuing evacuation signals and opening reception systems, or minimize damage, activate
positive response systems (such as suppression systems), and enable managers to make the best decisions quickly.

Perfect medical crisis early warning system can intuitively assess and simulate the possible damage caused by medical accidents, so as to warn hospital managers to make a prompt and reasonable response. According to Lawrence Barton's Crisis Prevention and Response, the Planning Model shows how the team begins with assessing crises that may affect the safety and functioning of personnel and then uses skills and resources to reduce the probability of such crises.

Because of individual differences, everyone has different reaction and response to early warning. This mainly depends on their experience and belief. What's more, the degree of variability in the content of early warning is also very important [12]. The main reference factors include the clarity, coherence and authority of information, as well as the authority of early warning in the past, the frequency of crises or disasters [13]. When the recipient finds that the information is clear with multiple and reliable sources supporting, they will respond quickly. Otherwise, they may ignore the early warning, which may cause the loss of opportunity to choose or implement the response.

Therefore, the top priority is how to further enhance the preparatory capacity of hospital medical crisis management. Hospital preparatory management is mainly to prevent hospital medical crisis. Hospitals can select experts from various fields to form a medical crisis management team, formulate crisis management plans and carry out daily crisis management. At the same time, hospitals need to establish a complete and effective crisis early warning system to understand more clearly the symptoms before the outbreak of the medical crisis. What's more, the hospitals should organize staff training and exercises on crisis events, so that each employee can master certain crisis management methods, and face the crisis calmly when it comes [14].

Reaction
Crisis reaction, refers to what strategies hospitals should take to solve the crisis when the medical crisis takes place. Crisis reaction covers a wide range of areas, including crisis communication, media management, decision-making, and stakeholder communication. In regards to ‘reaction’, hospitals first need to know how to create more time to deal with the crisis. Secondly, how to obtain more comprehensive and real information is also important for understanding the extent of the crisis and providing the basis for the smooth solution of the crisis [15]. Finally, the hospital ought to emphasize the method of reducing the loss to the hospitals after the crisis is over.

When a medical crisis occurs, the hospitals should pay attention to the victims, supervisor departments, news media, internal staff and the general public quickly. For victims, it is necessary to quickly determine the contact between the medical staff and the victim, quickly determine the commitment for crisis responsibility and the method of achieving commitment, quickly formulate the compensation scheme for losses, quickly formulate the rehabilitation program, trace the causes and address the person responsible, then quickly apologize to the public and comfort the victims [16]. For supervisor departments, they should maintain close contact and seek guidance and help from them, timely report to superiors on the development of the situation and events upholding the principle of truth, so as not to distort or conceal the truth. After that, they should report to superior departments on the course of events, handling measures, solutions and preventive measures. For the news media, the hospitals should actively maintain contact with the media, timely communicate with the media the dynamic information of the investigation and handling method, determine and inform the time and place of the press conference; clarify the basic attitude towards the report, point out the inaccuracies of the report, avoid generating antagonistic emotions, and apologize publicly when necessary. For the internal staff, first of all, hospitals should do a good job in stabilizing their emotions, maintaining the normal order of the hospital, informing the staff of the truth of the incident and the measures taken, and strive for all of us to work together to tide over the difficulties. Secondly, the hospitals should collect the staff's suggestions and opinions, do a good job in rescuing and treating the casualties, and formulate the work of recovering the adverse effects in order to improve the organization image of the program and measures. Other public medical institutions should timely inform partners, community public, social institutions and government departments of the crisis events and their treatment measures, and formulate corresponding programs to eliminate the adverse effects of the crisis events in an all-round way [17].

Resilience
Crisis resilience refers to the promotion and restoration of hospital image and reputation when the crisis occurs and is controlled. On the other hand, it refers to summarizing the crisis after the crises are over, providing experience and support for future crisis management, and avoiding the recurrence of the crisis. Once the crisis is under control, quickly recovering the losses caused by the crisis will become the most important task of crisis response. The hospital should analyze the impact and consequences of the crisis before recovering. The hospital should then formulate a targeted recovery plan, so that the hospital can get rid of the shadow of the crisis as soon as possible. At the same time, hospitals should seize the opportunities
brought by the crisis and make necessary innovations and explorations to make the hospital develop better and more steadily than before [18].

Discussion

Effective crisis management is the integration of all aspects of 4R model. Among them, curtailment management runs through the whole process of crisis management. In the preparation module, the risk assessment method of curtailment management can be used to determine which early warning systems may fail, which can be corrected or strengthened in time. In the reaction module, reduced management can help managers identify the root causes of the crisis and find ways to cope with it [19]. In the resilience module, reduction management can assess the risks that may arise during the implementation of the recovery plan, so that the recovery work can have a greater rebound effect.

4R crisis management theory tells us that hospitals should actively manage risk rather than passively wait, otherwise the risk will be transformed into crisis. Building an ABC structure is a good approach to manage crisis. A. ‘away’, getting rid of risk or the root of the crisis; B. ‘better’, doing better than the requirements to resist the risk or the root of the crisis; C. ‘Compatible’, being compatible with the systems that can resist most risk or the root of the crisis; establishing the effective system of CMSS (the framework structure of the crisis control), which is made up of consulting information system and decision operation system.

As long as the hospital finds the source of the crisis and takes the correct measures, the hospital may become more mature and not only come out unscathed, but by handling the situation correctly its prestige and reputation may grow. With the right system in place, hospital managers can correctly face up to the medical crisis, and constantly improve the ability of crisis curtailment, preparation, reaction and resilience [16].

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Conflicts of Interest

The authors declare no conflict of interest.

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